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Marshall Star, October 12, 2011 Edition

# MARSHALL STAR

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## Science & Technology Office Highlights Science Expertise, Pushes Technology Development

*By Janet Anderson*

The Science & Technology Office, a new program office established as part of the Marshall Space Flight Center's reorganization, is helping NASA achieve its bold and ambitious mission for a sustainable program of exploration and innovation through science and technology development.

The office, which became operational Aug. 28, manages science programs and projects for the agency's Science Mission Directorate, is responsible for basic and applied research, and develops new technologies to achieve NASA's science and exploration objectives. Additionally, the office is charged with integrating early stage research and game-changing technology development activities for projects assigned to and competitively won by Marshall. Further, the office manages the Centennial Challenges Program, NASA's space competition prize contests for non-government funded technology achievements by American teams.

The Science & Technology Office also has oversight in the technology transfer initiative to ensure awareness and open communication among industry, other government organizations and Marshall regarding technology development efforts.

Dr. Dan Schumacher, previously the director of Marshall's Science and

Mission Systems Office, has been assigned to lead the office.



Schumacher (NASA/MSFC)



Clinton (NASA/MSFC)

Dr. Raymond "Corky" Clinton serves as deputy manager of the Science & Technology Office. He is responsible for the day-to-day oversight of the organization and its more than 250 civil service and contract employees. Clinton served as deputy manager of the former Science and Mission Systems Office since April 2008.

### Science and Research Office

Dr. Jim Spann leads the Science and Research Office, which manages all science investigations activities related to space science and earth science. The five focus areas of research are high energy astrophysics, solar and space weather physics, planetary science, Earth science research and analysis focusing on the Earth's water cycle and climate, and applied Earth science.



Spann (NASA/MSFC)

### Science and Space Technology Projects Office



Hefner (NASA/MSFC)

Led by Keith Hefner, the Science and Space Technology Office includes NASA's Chandra X-ray Observatory, along with several science instrument projects including Hinode and GLAST Burst Monitor. Hefner also will oversee work conducted at the X-Ray and Cryogenics Facility for optics metrology and testing, including testing for the James Webb Space Telescope. Additional areas of effort include the management of science instruments such as the Solar Wind Electrons Alphas and Protons instrument or SWEAP, High Resolution Coronal Imager (Hi-C) and the Solar Ultraviolet Magnetograph Instrument (SUMI).

## Technology Development and Transfer Office

The focal areas for the Technology Development and Transfer Office, led by Dr. Dan Dorney, include Centennial Challenges, small spacecraft technology development, game-changing technology development and technology transfer.

The Centennial Challenges Program -- NASA's technology competition prize contests -- was developed to advance technology that is of value to NASA's missions and to the aerospace community at large. This is accomplished by the offering of a prize purse -- with the technology selected by NASA and set up as a competition, awarding the prize money to the teams or individuals that achieve the technology challenge.

Additionally, the Technology Development and Transfer Office will oversee Marshall's technology transfer initiatives.

*Anderson is a public affairs officer in the Office of Strategic Analysis & Communications.*



Dorney (NASA/MSFC)

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## An interview with Dan Schumacher, manager of the Science & Technology Office



The Marshall Star recently sat down with Dan Schumacher about his new position as manager of the Science & Technology Office -- one of the new offices established during the recent Marshall Space Flight Center reorganization.

***Image left: Dan Schumacher, manager of the Science & Technology Office. (MSFC/Emmett Given)***

**What role will Science and Technology have in the center's mission?**

Science and Technology are two of the major goals for the agency. These areas represent one-third of the overall agency budget. In the past, as Science & Mission Systems, we had everything in the organization but Shuttle and

Ares. So, we are a more focused organization now. To that end, we are looking to identify new projects and integrate existing projects and capabilities to work in concert with the center's Strategic Development team.

**What is your management philosophy?**

One of the most important things about my management philosophy is people -- creating an environment where the best and brightest are attracted, thrive and unleashed -- people who understand their jobs, roles, responsibilities and have the background to do their jobs.

ZP is a diverse organization with science, hardware and technology, but our main resource is people. People need to be empowered to make decisions, with guidance from me, but for the most part they have their own goals and objectives which they are working toward that we have agreed to. It is also important to me to get to know people in the org -- something about them, and that they have a connection to their work and a place where they want to work. I see it as my responsibility to make it happen and I believe we have these ingredients here at NASA.

**What is one of the most important lessons you have learned as a manager?**

Probably the most important lesson I have learned is to trust my instincts. Something comes up and you have a gut feeling about it -- everybody wants to go in a certain direction, but you personally have a gut feeling that is telling you something else. It is important to have the courage to go against the grain and offer the reasons why you disagree. It is tempting to go with a decision where the ground swell of support lies, but is imperative as a leader to take a stand or make a decision and try to avoid group think situations. I have found that my gut is right a lot of the time.

**What challenges do you face?**

Sometimes stakeholders have different goals -- like science and technology. However, this can be strength. Getting groups to communicate and collaborate is strength because those different viewpoints can work to solve problems. The different perspectives offer a whole new way of looking at a problem. Scientists have solved problems with the shuttle and flight hardware. Engineers have figured out ways to make science theory a proven reality. Technology is driven by science and engineering needs.

Another challenge is that part of ZP has offices at the National Space Science and Technology Center, while others are here on center. It takes creativity to keep the collaboration between two locations going. It is important that both locations feel I care about what is going on and that I have a presence.

**What is your vision for ZP?**

It would be easy if [Marshall Center Director] Robert [Lightfoot] said double the work or triple the research paper output -- which is what would happen with industry -- where pure numbers and dollars are used for goals. Sometimes I am envious of industry for that reason, but in a government operation it isn't that simple.

Our goals are to focus on what is within NASA's needs and the nation's needs -- we need to focus on benefits to society -- the taxpayer -- in scientific advances and research.

In science, I would like to build more flight hardware or instrument building such as balloons, sounding rockets and efforts to utilize engineering and science in a collaborative manner.

Over the last few years, technology has lacked support and has not been at the front and center at NASA. Now, we are pushing at the agency level for effective technology to transition to programs and projects with industry or pushing for flight-ready technology. Fewer studies and more tested hands on technology work to transition from program and project to industry.

One way our center could help support ZP is to know more about what we do -- our contribution is just as important to the agency as heavy lift. Go to a lecture or on a tour, people are amazed to find out what is going on at the center. Return on taxpayer investment -- that is easy to see in ZP.

**What are some of the new programs or projects in ZP?**

There are several in the technology area of S&T. One that has been in the news lately is the Centennial Challenges

Program which offers incentive prizes to generate revolutionary solutions to problems of interest to NASA and the nation from non-traditional sources. Last week, the Green Flight Challenge was held Sept. 26 in Santa Rosa, Calif., and a prize purse of \$1.6 million was offered to teams that could develop a plane with four areas of design criteria.

*Janet Anderson, a public affairs officer in the Office of Strategic Analysis & Communications, compiled this interview.*

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## **Marshall Scientist Dr. Jonathan Cirtain Receives Presidential Early Career Award**

*By Janet Anderson*

Dr. Jonathan W. Cirtain, an astrophysicist at the Marshall Space Flight Center is among the four NASA researchers President Obama named as recipients of the 2010 Presidential Early Career Award for Scientists and Engineers, or PECASE.

Cirtain was recognized for his outstanding research on basic physical processes observed in solar and space plasmas through innovative engineering and instrument designs. All four award recipients were nominated by NASA's Science Mission Directorate. The awards were announced in September and will be presented during an ceremony Oct. 14 in Washington.

The PECASE award is the highest honor bestowed by the U.S. government on scientists and engineers beginning their independent careers. The award recognizes recipients' exceptional potential for leadership at the frontiers of scientific knowledge, and their commitment to community service as demonstrated through scientific leadership, education or community outreach.



Jonathan Cirtain (NASA/MSFC)

"We are thrilled to honor these outstanding early-career scientists, and will look forward to their ongoing contributions to the exploration of our planet, our solar system and our place in the universe," said NASA Chief Scientist Waleed Abdalati at NASA Headquarters. "The work of these talented individuals will help us turn the dreams of today into the reality of tomorrow."

Cirtain came to Marshall in 2007 as an astrophysicist. He serves as the project scientist for Hinode, a joint U.S.-Japanese mission to study the sun, and as principal investigator for two sounding rocket experiments: the High Resolution Coronal Imager (Hi-C) and the Solar Ultraviolet Magnetograph Instrument (SUMI). Hi-C will be launched from White Sands Missile Range on June 19, 2012, and SUMI will complete its second launch on June 12, 2012, also from White Sands.

Cirtain also is the institutional principal investigator for the Solar Wind Electrons, Alpha and Protons instrument or SWEAP, slated to launch no later than 2018 aboard the Solar Probe + mission to explore unprecedented regions in space, transforming our understanding of the sun and its effects on the solar system.

Among his numerous past achievements and honors, Cirtain received the 2011 NASA Medal for Exceptional Achievement for his work developing solar physics instrumentation.

The 2010 NASA recipients were nominated by the agency's Science Mission Directorate.

For more information about Cirtain's work, visit:

<http://www.nasa.gov/hinode>

<http://www.nasa.gov/centers/marshall/news/news/releases/2010/10-129.html>



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## 23 Marshall Team Members Honored with Silver Snoopy Recognition

By Amie Cotton



Twenty-three Marshall Space Flight Center team members were honored Sept. 28 with the coveted Silver Snoopy award, presented by astronauts Mark Vande Hei and G. Reid Wiseman during a ceremony at the Educator Resource Center at the U.S. Space & Rocket Center. Marshall Deputy Director Gene Goldman and Herb Shivers, deputy director of Marshall's Safety & Mission Assurance Directorate, joined astronauts in the presentation.

Since 1968, NASA's Space Flight Awareness Program has awarded the Silver Snoopy to outstanding civil service and contractor employees who have significantly contributed to the human spaceflight program. The prestigious honor is awarded only by astronauts and includes a silver pin flown onboard a shuttle mission with the famous "Peanuts" comic strip dog, Snoopy, dressed in an astronaut suit. Honorees also receive a framed certificate and a congratulatory letter personally signed by astronauts.



**Image right: Silver Snoopy honorees, Marshall Deputy Director Gene Goldman and astronauts Mark Vande Hei and G. Reid Wiseman gather at the Educator Resource Center Sept. 28. (NASA/MSFC)**

Honorees included Barbara J. Brantley, Office of the Chief Information Officer; Timothy M. Broach, Teledyne Brown Engineering/Tec-Masters; Don Burch, Engineering Directorate; Stephen N. Cato, Engineering Directorate; Ryan Kilpatrick Decker, Engineering Directorate; Melinda Delacruz, Science & Technology Office; Don Dobravolsky, Bastion Technologies; Norma Dugal-Whitehead, Engineering Directorate; Natalie C. Frazier, Jacobs; Phillip M. Harrison, Engineering Directorate; Kathy G. Huskey, Office of the Chief Financial Officer; Terro James Jenkins III, The Boeing Company; Rhonda K. Lash, Engineering Directorate; Kenneth M. Lewis, Engineering Directorate; Bruce W. McCoy, Engineering Directorate; Kelvin F. Nichols, Engineering Directorate; David W. Reynolds, Engineering Directorate; Monserrate C. Roman, Science & Technology Office; Sally A. Richardson, Engineering Directorate; Denise S. Smithers, Office of the Chief Financial Officer; Yvonne Villegas-Aguilera, Engineering Directorate; Grant Wang, The Boeing Company; and Yancy Young, Science & Technology Office.

*Cotton, an AI Signal Research Inc. employee and the Marshall Star editor, supports the Office of Strategic Analysis & Communications.*

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## International Space Station Partners Set Tentative Launch Schedule

NASA news release



NASA and its international partners have agreed to a tentative launch schedule with crew flights to the International Space Station resuming Nov. 14.

***Image left: Two Russian Soyuz spacecrafts are backlit by an auroral display in this picture taken from the International Space Station on Sept. 17. (NASA/Michael Fossum)***

The Space Station Control Board, representing all partner agencies, set the schedule after hearing the Russian Federal Space Agency's findings on the Aug. 24 loss of the Progress 44 cargo craft. The dates may be adjusted to

reflect minor changes in vehicle processing timelines.

"Our top priority is the safety of our crew members," said International Space Station Program Manager Michael Suffredini on Sept. 15. "The plan approved today, coupled with the conditions on orbit, allow the partnership to support this priority while ensuring astronauts will continue to live and work on the station uninterrupted. Our Russian colleagues have completed an amazing amount of work in a very short time to determine root cause and develop a recovery plan that allows for a safe return to flight. We'll have a longer period of three-person operations and a shorter than usual handover between the next two crews, but we are confident that the crews will be able to continue valuable research and execute a smooth crew transition."

According to the current plan, the Soyuz 28 spacecraft, carrying NASA's Dan Burbank and Russia's Anatoly Ivanishin and Anton Shkaplerov, will launch Nov. 14 from the Baikonur Cosmodrome in Kazakhstan and arrive at the space station on Nov. 16.

On Nov. 22, NASA Expedition 29 Commander Michael Fossum, Japan's Satoshi Furukawa and Russia's Sergei Volkov will undock their Soyuz 27 spacecraft and land in the northern Kazakhstan landing zone. Expedition 30 Commander Burbank, Ivanishin and Shkaplerov will work as a three-person crew for 36 days. The remainder of the Expedition 30 crew -- NASA's Don Pettit, Russia's Oleg Kononenko and Europe's Andre Kuipers -- will launch to the space station aboard the Soyuz 29 spacecraft on or about Dec. 26 and dock to the station two days later. The exact launch date is under review.

The control board also received a report on the status of supplies and spare parts aboard the station. The report shows there are sufficient logistical supplies to support crews through the summer of 2012 without deliveries from the scheduled cargo flights.

For the new tentative Soyuz and Progress launch dates in 2011, visit <http://www.nasa.gov/stationflights>.

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**Living the High Life: Chandra Observes 'Pacman Nebula'**

High-mass stars are important because they are responsible for much of the energy pumped into our galaxy over its lifetime. Unfortunately, these stars are poorly understood because they are often found relatively far away and can be obscured by gas and dust. The star cluster NGC 281 is an exception to this rule. Its position -- about 6,500 light years from Earth and almost 1,000 light years above the plane of the Milky Way galaxy -- gives astronomers a nearly unfettered view of the star formation within it.

***Image right: Star cluster NGC 281, also known as the "Pacman Nebula." (X-ray NASA/CXC/CfA/S.Wolk; IR NASA/JPL/CfA/S.Wolk)***



This recently released composite image of NGC 281 contains purple X-ray data from the [Chandra X-ray Observatory](#) and red, green and blue infrared observations from the [Spitzer Space Telescope](#). The high-mass stars in NGC 281 drive many aspects of their galactic environment through powerful winds flowing from their surfaces and intense radiation that heats surrounding gas, boiling it away into interstellar space. This process results in the formation of large columns of gas and dust, as seen on the left side of the image. These structures likely contain newly forming stars. The eventual deaths of massive stars as supernovas also will seed the galaxy with material and energy.

NGC 281 is known informally as the "Pacman Nebula" because of its appearance in optical images. The "mouth" of the Pacman character appears dark because of obscuration by dust and gas -- but in the infrared Spitzer image the dust in this region glows brightly.

The Marshall Space Flight Center manages the Chandra program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory controls Chandra's science and flight operations from Cambridge, Mass.

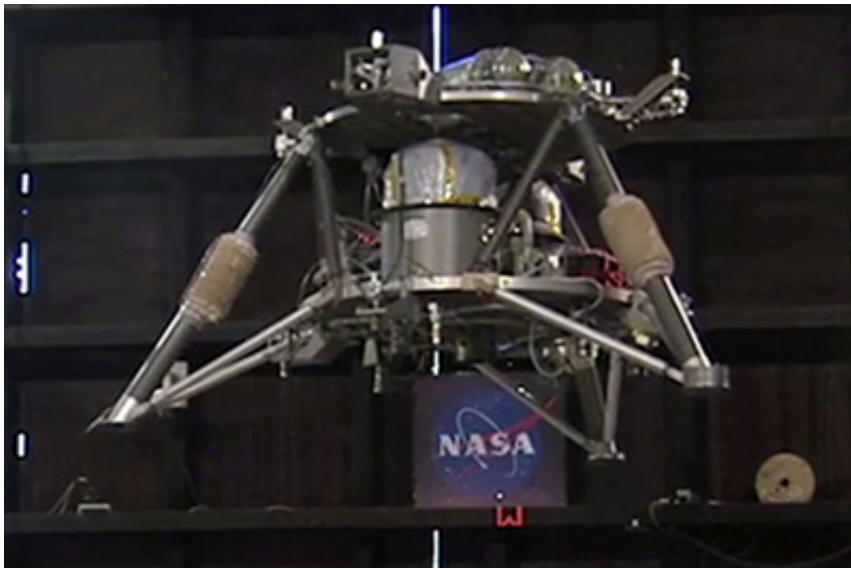
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**NASA Web Chat Series Continues Oct. 13 with 'Landing on Other Planets: How Hard Can It Be?'**

*By Kim Newton*





A lot of people grew up watching the popular Star Trek series that made space travel look easy. The show is fun and entertaining, but in reality space travel is highly complex and simply landing on another celestial body is a highly sophisticated task that takes a lot of science and engineering know how. And, lots and lots of testing to work out any hardware or software glitches.

***Image right: NASA's robotic lander prototype hovers autonomously during its second free-flight test at the Marshall Center. (NASA/MSFC)***

On Oct. 13, from 2-3 p.m. CDT, NASA experts Dr. Barbara Cohen, planetary scientist, and Dr. Greg Chavers, lead systems engineer for the Robotic Lander Project, both at Marshall Space Flight Center, will lead a web chat and answer online questions about why it's important to continue developing vehicles to explore other destinations within our solar system and the engineering challenges of doing so. Join the chat by logging on [here](#).

Marshall has developed a robotic lander prototype that's currently undergoing testing to mature the capability needed to successfully land on another planetary body. The lander is proving to work well and the team has learned that the final landing step, setting a craft down on a foreign body, is one of the most complex -- and important. A simple landing error could result in mission failure.

The robotic lander team has spent countless hours testing the lander prototype, dubbed Mighty Eagle, to ensure it will be able to perform a precision autonomous landing when it comes time to execute a real space landing. During each test, the lander fires an onboard gravity-canceling thruster to simulate the gravity of another planet. These tests go a long way in providing the team with key data about important aspects of the lander system, such as algorithms, sensors, avionics, software, landing legs, and integrated system elements that will enable the lander to one day touch down gently and safely.

For more information on the "Back to School" Web Chat science series, click [here](#).

*Newton is a public affairs officer in the Office of Strategic Analysis & Communications.*

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### **Marshall's David Brock to Speak at Disabilities Awareness Month 'Lunch-and-Learn' Oct. 13**

David Brock, Marshall Space Flight Center's Small Business Specialist, will speak at this year's Disabilities Awareness Program "Lunch-and-Learn" seminar on Oct. 13 from 11:30 a.m. until 12:30 p.m. in Building 4200, Room P110. The National Disabilities Awareness theme for 2011 is "Profit by Investing in Workers with Disabilities." All Marshall team members are invited to attend.

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### **Physical Inventory of NASA Bar-Coded Property to Begin in October**

A physical inventory of all NASA-tagged, bar-coded property at the Marshall Space Flight Center began Oct. 3. The inventory will be conducted by Marshall's Logistics Services Office, part of the Office of Center Operations.

All equipment in team members' file cabinets, desks and other storage areas must be made available for scanning by the

inventory teams. All controlled equipment documented on an individual's "Mobile Equipment Property Pass" also must be made available for inventory. Property passes are assigned to those people carrying government equipment on or off Redstone Arsenal.

The Logistics Service Office has posted the 2011 physical inventory schedule on Inside Marshall. Managers are asked to review the schedule and inform their employees, including contractors and off-site workers, of the inventory schedule for their department. If absences are anticipated during an inventory visit, users must make arrangements with management for an alternate time.

For questions, contact Patsy Nash at 256-544-0050 or Margarette Saint at 256-544- 4771 prior to the scheduled visit.

**Find this article at:**

<http://www.nasa.gov/centers/marshall/about/star/index.html>